

and/or C<sub>4</sub> alkane and from about 50 to about 95 parts by weight of cyclopentane to produce the polyurethane. The polyurethanes produced by the claimed process are characterized by both good thermal insulation and compressive strength properties.

Claims 11-15, 18 and 21 stand rejected under 35 U.S.C. § 103 as being unpatentable over DeVos et al '101 (U.S. Patent 5,444,101). Applicants respectfully traverse this rejection.

As noted in the Office Action, DeVos et al '101 does include amine-initiated polyols among those described as being suitable to the practice of the invention disclosed therein. However, DeVos et al '101 also teaches that any of the known isocyanate-reactive materials are suitable.

One skilled in the art would therefore need to select aromatic amine-initiated polyols from the hundreds of polyols included within the teachings of DeVos et al '101.

DeVos et al '101 also discloses a broad class of co-blowing agents that includes alkanes, cycloalkanes hydrofluorocarbons, hydrochlorofluorocarbons, fluorocarbons, fluorinated ethers, alkenes, alkynes and noble gases. Alkanes and hydrofluorocarbons are described as being preferred. Twenty-three alkanes and eight hydrofluorocarbons are specifically mentioned by DeVos et al '101 as being suitable. The most preferred co-blowing agents are taught to be isopentane, n-pentane and HFC 134a.

One skilled in the art would therefore need to select the "appropriate" co-blowing agents from the hundreds of blowing agents included within the broad reference disclosure. However, the co-blowing agents taught by the reference to be most preferred do not include the C<sub>3</sub> and/or C<sub>4</sub> blowing agents required in Applicants' claimed invention.

Applicants have found that the particular combination of an amine-initiated polyol with a cyclopentane plus C<sub>3</sub> and/or C<sub>4</sub> alkane blowing agent mixture produces a rigid polyurethane foam having both good thermal insulation properties and compression strength values.

DeVos et al '101 does not discuss the compression strength of foams produced in accordance with the process disclosed therein. One skilled in the art

seeking to develop a rigid polyurethane foam having improved compression strength in addition to good thermal insulation properties would not therefore receive any guidance as to how to achieve this goal from the DeVos et al '101 reference.

Applicants would further note that DeVos et al '101 did not include a single example in which a C<sub>3</sub> and/or C<sub>4</sub> co-blowing agent was used.

The absence of such an example is significant in view of the fact that C<sub>3</sub> and/or C<sub>4</sub> alkanes adversely affect the solubility of the blowing agent mixture in most of the polyols that are typically used to produce rigid polyurethane foams. (See discussion at page 2, lines 1-6 of the specification.) Solubility of a blowing agent in the foam-forming system has a significant effect upon the processability of the foam-forming mixture and upon the consistency of the foam structure.

DeVos et al '101 does not address this solubility issue. Nor could a solution to this problem be inherently disclosed in the DeVos et al '101 reference because no C<sub>3</sub> or C<sub>4</sub> alkane was used in any of the Examples given therein. One skilled in the art reading the DeVos et al '101 reference would not therefore consider it obvious to select the less soluble C<sub>3</sub> and C<sub>4</sub> alkanes from the many blowing agents disclosed in the reference. Consequently, a skilled artisan would not be led to Applicants' invention by the teachings in the DeVos et al '101 reference.

The teachings of DeVos et al '101 can not therefore be construed in a manner which would render Applicants' claimed invention obvious.

Withdrawal of this rejection is therefore requested.

Claims 19-23 stand rejected under 35 U.S.C. § 102 as being substantially met by DeVos et al (U.S. Patent 5,444,101).

Applicants respectfully traverse this rejection.

Specific reference was made to Claim 4 of the DeVos et al reference as support for this rejection.

Applicants would point out that Claim 4 of the reference requires a mixture of cyclopentane and isopentane satisfying the specified molar ratios. Applicants' blowing agent mixture must include a C<sub>3</sub> and/or C<sub>4</sub> alkane as well as cyclopentane. The blowing agent mixture of DeVos et al's Claim 4 does **not** include a C<sub>3</sub> or a C<sub>4</sub> alkane blowing agent.

DeVos et al does not therefore disclose Applicants' invention with the specificity necessary to support a rejection under 35 U.S.C. § 102.

Withdrawal of this rejection is therefore requested.

In view of the above remarks, reconsideration and allowance of Claims 11-15 and 18-23 are respectfully requested.

Respectfully submitted,

KARL W. DIETRICH  
NORBERT EISEN  
GERHARD HEILIG

By 

Lyndanne M. Whalen  
Attorney for Applicants  
Reg. No. 29,457

Bayer Corporation  
100 Bayer Road  
Pittsburgh, Pennsylvania 15205-9741  
(412) 777-2347  
FACSIMILE PHONE NUMBER:  
(412) 777-5449  
s:\ks\LMW1188